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TERATOLOGY IN TRILLIUM OVATUM PURSH.

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(Plate 92.)

The many instances of teratology in the genus Trillium that are coming to notice more and more as greater attention is paid to this branch of botanical study, and observers are more on the lookout for these forms, seem to show the marked instability in the genus. I have already noted a number of cases (see Rhodora, x. 21–24 and 214–216, 1908 and xii. 163–166, 1910) from New England and New York, and I take great pleasure in recording a most interesting instance in a species from the far west, *Trillium ovatum* Pursh. According to Mr. Charles V. Piper in his Flora of the State of Washington, comprising volume XI. of the Contributions from the United States National Herbarium and bearing the date 1906, the range of the species is "British Columbia to California and Idaho." The type locality is "'On the rapids of the Columbia River.' Collected by Lewis, April 10, 1806, on which date he was at the foot of the Cascades of the Columbia." The flower is white, turning purplish with age.

It is through the courtesy of Mr. W. T. Putnam of Lake Cushman, Washington, a careful observer and an ardent lover of nature, that I am enabled to write the following description. In a letter dated Lake Cushman, Washington, May 24, 1911, Mr. Putnam writes, "A few days ago I found a specimen of the common Trillium of a most beautiful pink and white, not at all the purplish tinge which comes as the flower ages, which had no less than 18 petals. The flower is at present pressing....The root I have." On June 17 I

received the plant carefully pressed, with the rhizome packed in earth in a small box. The latter I turned over to Mr. Robert Cameron of the Harvard Botanic Garden, who planted it in an appropriate place where its development will be watched with much interest. Mr. Putnam sent with the plant a photograph which he calls "A Vine Maple thicket, the setting in which the Trillium was found." The scene in a truly tropical one. The tree is *Acer circinatum* Pursh.

The abnormality in the Trillium is confined to the petals, stamens and pistil. The leaves are normal, in a single whorl of three, rhombic-ovate, and averaging 14 cm. long and 10 cm. broad. The peduncle is 7.5 cm. long and the sepals are narrowly lanceolate, 3.8 cm., 3.7 cm., 3.7 cm. long, and 8 mm. wide.

The petals reach the extraordinary number of twenty-four. Eighteen are in regular alternating whorls of three, the 1st, 3d and 5th and the 2d, 4th and 6th whorls being superposed upon each other. The six petals in the center of the flower form a partially closed cluster, their crumpled and undeveloped character preventing a complete diagnosis of their exact position and shape. The length of the longest one is 1.8 cm., and they apparently alternate with the others in groups of three each in regular order.

I took careful measurements of the first 18 petals. The same order is preserved throughout, the first figures, in whorls 1, 3 and 5 of 3 petals each, referring to the petals superposed upon each other, and so on. The same is true of whorls 2, 4 and 6, and also of the descriptions of the petals. The following is the table of measurements of the petals:

1st whorl, 3.8 cm., 3.8 cm., 3.8 cm. long.
2.3 cm., 2.3 cm., 2.3 cm. broad.
2d whorl, 4.2 cm., 4.2 cm., 4.2 cm. long.
2.7 cm., 2.7 cm., 2.7 cm. broad.
3d whorl, 4.4 cm., 4.2 cm., 4.1 cm. long.
2.5 cm., 2.2 cm., 2.5 cm. broad.
4th whorl, 3.8 cm., 3.8 cm., 3.5 cm. long.
2.0 cm., 2.2 cm., 2.0 cm. broad.
5th whorl, 3.6 cm., 3.4 cm., 3.0 cm. long.
1.8 cm., 1.5 cm., 1.7 cm. broad.
6th whorl, 3.3 cm., 3.1 cm., 3.1 cm. long.
1.9 cm., 1.9 cm., 1.7 cm. broad.

The shape of the petals are as follows:

1st whorl, broadly ovate.
2d " " "
3d " first two slightly ovate, third oblong.
4th " first ovate, second and third obovate.
5th " broadly ovate.
6th " first ovate, second and third oblong.

All the petals are obtuse. There are no stamens or pistil. An interesting accompaniment to the multiplication of petals is, as before related, in the color, the white turning to pink and white, instead of purple. The general resemblance of the flower to that of our beautiful sweet-scented Water Lily, *Castalia odorata* (Ait.) Wood-ville & Wood, with its many petals, is well shown in the accompanying illustration kindly drawn by Mr. F. Schuyler Mathews. A form of this Water Lily growing mainly near the coast has petals varying from white and pink to pink-red in color.

Turning to the literature dealing with the multiplication of petals in Trillium I find that Prof. F. M. Andrews says in The Plant World for May, 1906, page 101, concerning some plants found near Bloomington, Indiana, "In *Trillium recurvatum* the number of these leaves [floral leaves or petals] in the flowers without reproductive organs was twenty-three, and in *Trillium sessile* fourteen." A specimen of *T. recurvatum* with twenty floral leaves or petals is figured on page 103.

In the Asa Gray Bulletin for February, 1898, pages 18–20, Mrs. W. A. Kellerman tells a most interesting story of a double *Trillium grandiflorum*. The plant was found in the woods of Jefferson County, Ohio. It had thrived, after being transplanted, for ten years, always producing a double flower, when Mrs. Kellerman secured three flowers from the plant. Two she mounted in diagrammatic form, one showing nine, and the other *thirteen* whorls of petals. The latter is figured on page 20.

The late Prof. William R. Dudley in The Cayuga Flora, 1886, page 99, under *Trillium grandiflorum* Salisb. says, "Double-flowered specimens from Woodwardia Swamp Woods, have about 14 parts to the perianth." Instances might be multiplied, but enough have been given to show that this phase of teratology in Trillium is well known in a number of species, but, so far as I have learned, it has not been previously recorded for the northwestern *Trillium ovatum*.

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